AMENDMENTS TO THE CLAIMS

The listing of the claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): A microfabricated Bragg channel waveguide of semiconductor-compatible materials, comprising:

a closed trench having an annular hollow core of arbitrary cross-section embedded in a substrate for the propagation of an optical wave therein, and

a continuous multilayer dielectric cladding deposited conformably on the inner wall of the annular hollow core, the cladding comprising at least one alternating layer of a first dielectric material having a high index of refraction and a second dielectric material having a lower index of refraction, such that the thicknesses of the alternating layers satisfy the condition for minimum radiation loss at the wavelength of the optical wave.

Claim 2 (original): The microfabricated Bragg channel waveguide of claim 1, wherein the semiconductor-compatible materials comprise silicon-based materials.

Claim 3 (original): The microfabricated Bragg channel waveguide of claim 2, wherein the silicon-based materials comprise single crystal silicon, polysilicon, silicon dioxide, silicon nitride, silicon oxynitride, or silicon carbide.

Claim 4 (original): The microfabricated Bragg channel waveguide of claim 1, wherein the semiconductor-compatible materials comprise group II-VI or group III-V compound-based materials.

Claim 5 (currently amended): The microfabricated Bragg channel waveguide of claim 1, wherein the annular hollow core has a cross-section of dimension less than 1 millimeter.

Claim 6 (currently amended): The microfabricated Bragg channel waveguide of claim 1, wherein the annular hollow core has a cross-section of dimension less than 200 micrometers.

Claim 7 (original): The microfabricated Bragg channel waveguide of claim 1, wherein the thickness of the first cladding layer is less than 1 micrometer.

Claim 8 (original): The microfabricated Bragg channel waveguide of claim 1, wherein the thickness of the first cladding layer is less than 0.1 micrometers.

Claim 9 (original): The microfabricated Bragg channel waveguide of claim 1, wherein the at least one alternating layer comprises less than five alternating layer periods.

Claim 10 (currently amended): The microfabricated Bragg channel waveguide of claim 1, wherein the annular hollow core is filled with a material having an index of refraction less than the index of refraction of the first dielectric material.

Claim 11 (currently amended): The microfabricated Bragg channel waveguide of claim 1, wherein the annular hollow core is filled with a material having an index of refraction greater than the index of refraction of the first dielectric material.

Claim 12 (currently amended): A microfabricated Bragg fiber of semiconductor-compatible materials, comprising:

a tube having an annular hollow core of arbitrary cross-section for the propagation of an optical wave therein, and

a continuous multilayer dielectric cladding deposited conformably on the inner wall of the annular hollow core, the cladding comprising at least one alternating layer of a first dielectric material having a high index of refraction and a second dielectric material having a lower index of refraction, such that the thicknesses of the alternating layers satisfy the condition for minimum radiation loss at the wavelength of the optical wave.

Claim 13 (previously amended): The microfabricated Bragg fiber of claim 12, wherein the semiconductor-compatible materials comprise silicon-based materials.

Claim 14 (original): The microfabricated Bragg fiber of claim 13, wherein the silicon-based materials comprise single crystal silicon, polysilicon, silicon dioxide, silicon nitride, silicon oxynitride, or silicon carbide.

Claim 15 (original): The microfabricated Bragg fiber of claim 12, wherein the semiconductor-compatible materials comprise group II-VI or group III-V compound-based materials.

Claim 16 (original): The microfabricated Bragg fiber of claim 12, wherein the tube has wall thickness less than 1 micrometer.

Claim 17 (currently amended): The microfabricated Bragg fiber of claim 12, wherein the annular hollow core has a cross-section of dimension less than 1 millimeter.

Claim 18 (currently amended): The microfabricated Bragg fiber of claim 12, wherein the annular hollow core has a cross-section of dimension less than 200 micrometers.

Claim 19 (original): The micorfabricated Bragg fiber of claim 12, wherein the thickness of the first cladding layer is less than 1 micrometer.

Claim 20 (original): The microfabricated Bragg fiber of claim 12, wherein the thickness of the first cladding layer is less than 0.1 micrometers.

Claim 21 (original): The microfabricated Bragg fiber of claim 12, wherein the at least one alternating layer comprises less than five alternating layer periods.

Claim 22 (currently amended): The microfabricated Bragg fiber of claim 12, wherein the annular hollow core is filled with a material having an index of refraction less than the index of refraction of the first dielectric material.

Claim 23 (currently amended): The microfabricated Bragg fiber of claim 12, wherein the annular hollow core is filled with a material having an index of refraction greater than the index of refraction of the first dielectric material.

Claims 24 - 43 (canceled).

Claim 44 (previously presented): The microfabricated Bragg channel waveguide of claim 1, wherein the optical wave comprises linear polarized light.

Claim 45 (previously presented): The microfabricated Bragg channel waveguide of claim 44, wherein the first cladding layer of the multilayer dielectric cladding is slightly below a half-wave thickness.

Claim 46 (previously presented): The microfabricated Bragg fiber of claim 12, wherein the optical wave comprises linear polarized light.

Claim 47 (previously presented): The microfabricated Bragg fiber of claim 46, wherein the first cladding layer of the multilayer dielectric cladding is slightly below a half-wave thickness.

Claim 48 (new) A Bragg waveguide, comprising:

an annular hollow core of arbitrary cross-section for the propagation therein of an optical wave comprising linearly polarized light,

a multilayer dielectric cladding on the inner wall of the annular hollow core, the cladding comprising at least one alternating layer of a first dielectric material having a high index of refraction and a second dielectric material having a lower index of refraction, such that the thicknesses of the alternating layers satisfy the condition for minimum radiation loss for propagating the optical wave in the annular hollow core.

Claim 49 (new): The Bragg waveguide of claim 48, wherein the first cladding layer of first dielectric material of the multilayer dielectric cladding is approximately half-wave thickness.

Claim 50 (new): The Bragg waveguide of claim 49, wherein the first cladding layer of first dielectric material of the multilayer dielectric cladding is slightly below a half-wave thickness.

Claim 51 (new): The Bragg waveguide of claim 48, wherein the second cladding layer of second dielectric material of the multilayer dielectric cladding is approximately quarter-wave thickness.

Claim 52 (new): The Bragg waveguide of claim 48, wherein the annular hollow core has a cross-section of dimension less than 1 millimeter.

Claim 53 (new): The Bragg waveguide of claim 48, wherein the annular hollow core has a cross-section of dimension less than 200 micrometers.

Claim 54 (new): The Bragg waveguide of claim 48, wherein the thickness of the first cladding layer is less than 1 micrometer.

Claim 55 (new): The Bragg waveguide of claim 48, wherein the thickness of the first cladding layer is less than 0.1 micrometers.

Claim 56 (new): The Bragg waveguide of claim 48, wherein the first and second dielectric materials comprise silicon-based materials.

Claim 57 (new): The Bragg waveguide of claim 56, wherein the silicon-based materials comprise single crystal silicon, polysilicon, silicon dioxide, silicon nitride, silicon oxynitride, or silicon carbide.